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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/663,593	09/16/2003	Michael A. Centanni	ST8012US	3283
22203	7590	01/21/2005	EXAMINER	
KUSNER & JAFFE HIGHLAND PLACE SUITE 310 6151 WILSON MILLS ROAD HIGHLAND HEIGHTS, OH 44143			MCKANE, ELIZABETH L	
			ART UNIT	PAPER NUMBER
			1744	

DATE MAILED: 01/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/663,593

Applicant(s)

CENTANNI ET AL.

Examiner

Leigh McKane

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 17-22 is/are allowed.
- 6) ☒ Claim(s) 1-16 and 23-29 is/are rejected.
- 7) ☒ Claim(s) 30 and 31 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 121803.051904.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, and 10-15 are rejected under 35 U.S.C. 102(b) as being anticipated by May et al (U.S. Patent No. 6,196,052).

May et al teaches a piezoelectric (quartz) gas sensor **154** for gases coated with an element from Groups III-VII and having electrodes **158,156**. The sensor is coated with a metal, which may be in an oxide form for those gases from Group VI. Suitable metals for Group VI include Ag and Mn. Note that H₂O₂ contains a Group VI element, oxygen. See col.7, line 6 to col.8, line 30. Note that the sensor of May et al is capable of detecting hydrogen peroxide through the reaction of peroxide with the metal oxide to form water, oxygen, and the elemental metal.

3. Claims 1-3 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Ishihara et al (Abstract of "Mixed oxide capacitor of barium titanate-lead oxide as a new type carbon dioxide gas sensor").

Ishihara et al discloses a piezoelectric gas sensor containing Barium Titanate with a PbO₂ coating. As the sensor of Ishihara et al is the same as that claimed by the present invention, it is inherently capable of sensing hydrogen peroxide.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over May et al in view of Ishihara et al.

May et al teaches the use of Ag, Cu, Cr, Mn, and Fe on the sensor when the gas contains a Group VI element. May et al does not disclose the use of Pb. However, Ishihara et al teaches the use of Pb when the gas sensed is CO₂ (which contains a Group VI element, oxygen).

Therefore, it is deemed obvious to one of ordinary skill in the art that other metals, such as Pb would have been suitable in the sensor of May et al.

7. Claims 4, 5, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishihara et al in view of Frechette et al (U.S. Patent No. 4,111,036)

The sensor of Ishihara et al employs a piezoelectric crystal (BaTiO₃), but a quartz crystal

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is not disclosed. Frechette et al, however, teaches that quartz is superior to barium titanate because it can be used as a piezoelectric material up to about 573 °C, whereas barium titanate loses its piezoelectric properties at 120°C (col.3, lines 42-64). For this reason, one would have found it obvious to substitute quartz for the BaTiO₃ of Ishihara et al.

8. Claims 6 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishihara et al and Frechette et al, and further in view of Schönfeld et al (U.S. Patent No. 5,958,787).

The combination *supra* fails to teach the resonant frequency of quartz. Regardless, Schönfeld et al discloses that piezoelectric crystals generally have a fundamental oscillation of 0.1 to 30 MHz. Therefore, it would have been obvious that the quartz of Frechette et al would have fallen within this range.

9. Claims 23-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Edwards et al in view of Schönfeld et al.

Edwards et al teaches a system for bio-decontamination including a system 10 for moving hydrogen peroxide through a space 32 and a sensor 52 for measuring hydrogen peroxide concentration. The sensor of Edwards et al is not a piezoelectric device. Schönfeld et al discloses a piezoelectric quartz device 20 for sensing oxidizing gases, such as hydrogen peroxide (col.2, lines 15-29), wherein a crystal 11 supports a material 13 which interacts with the oxidizing gas to produce a frequency change in the crystal, which relates to the concentration of the gas. See col.5, lines 17-24 and col.6, lines 52-60. The piezoelectric has a natural frequency of 3-30 Hz (col.1, line 22). It would have been obvious to one of ordinary skill in the art to use the piezoelectric sensor of Schönfeld et al as the sensor in the apparatus of Edwards et al because

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Schönfeld et al discloses that the sensor has “increased sensitivity and a long life” (col.5, lines 44-45) and is capable of detecting hydrogen peroxide.

Allowable Subject Matter

10. Claims 30 and 31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. The following is a statement of reasons for the indication of allowable subject matter: The combination of Edwards et al with Schönfeld et al teaches a piezoelectric crystal with an aromatic polymer coating and does not teach or suggest a metal oxide coating.

12. Claims 17-22 are allowed.

13. The following is an examiner’s statement of reasons for allowance: While Schönfeld et al teaches a method of determining a sterilant concentration employing a piezoelectric crystal, the reference fails to teach or suggest using a crystal having a metal oxide coating having a divalent or tetravalent state.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”


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Conclusion

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leigh McKane whose telephone number is 571-272-1275. The examiner can normally be reached on Monday-Wednesday (7:15 am-4:45 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert J. Warden can be reached on 571-272-1275. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Leigh McKane
Primary Examiner
Art Unit 1744

elm
19 January 2005